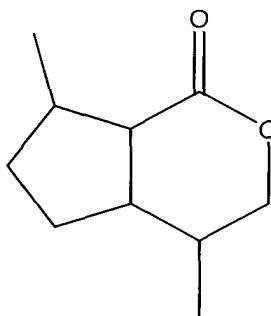


CLAIMS

What is claimed is:

- 5 1. A composition of matter that repels insects when applied to a human, animal or inanimate host comprising a dihydronepetalactone, or a mixture of dihydronepetalactone stereoisomers, represented by the general formula:



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2. The composition of Claim 1 wherein the dihydronepetalactone stereoisomers are (9*S*)-dihyronepetalactone stereoisomers derived from (7*S*)-nepetalactones.

- 15 3. The composition of Claim 1 which comprises 1*S*,9*S*,5*R*,6*R*-5,9-dimethyl-3-oxabicyclo[4.3.0]nonan-2-one.

4. The composition of Claim 1 which comprises dihydronepetalactone in an amount of from about 0.001% to about 80% by weight of the total weight of the composition.

- 20 5. The composition of Claim 1 which comprises dihydronepetalactone in an amount of from about 0.01% to about 30% by weight of the total weight of the composition.

6. The composition of Claim 1 which comprises one or more of the members of the group consisting of an adjuvant, a carrier and an insect repellent compound that is not a dihydronepetalactone.

5 7. The composition of Claim 6, wherein the adjuvant is selected from the group consisting of thickeners, buffering agents, chelating agents, preservatives, fragrances, antioxidants, gelling agents, stabilizers, surfactants, emollients, coloring agents, aloe vera, waxes, and therapeutically or cosmetically active ingredients.

10 8. The composition of Claim 6, wherein the carrier is selected from the group consisting of silicone, petrolatum, lanolin, liquid hydrocarbons, agricultural spray oils, paraffin oil, tall oils, liquid terpene hydrocarbons and terpene alcohols, aliphatic and aromatic alcohols, esters, aldehydes, ketones, mineral oil, higher alcohols, finely divided organic and inorganic solid materials.

15 9. The composition of Claim 6, wherein the carrier comprises an aerosol composition adapted to disperse the dihydronepetalactone into the atmosphere by means of a compressed gas.

20 10. The composition of Claim 6, wherein the non-hydronepetalactone insect repellent is selected from the group consisting of: benzil, benzyl benzoate, 2,3,4,5-bis(butyl-2-ene) tetrahydrofurfural, butoxypolypropylene glycol, N-butylacetanilide, normal-butyl-6,6-dimethyl-5,6-dihydro-1,4-pyrone-2-carboxylate, dibutyl adipate, dibutyl phthalate, di-normal-butyl succinate, N,N-diethyl-meta-toluamide, dimethyl carbate, dimethyl phthalate, 2-ethyl-2-butyl-1,3-propanediol, 2-ethyl-1,3-
25 hexanediol, di-normal-propyl isocinchomeronate, 2-phenylcyclohexanol, p-methane-3,8-diol, and normal-propyl N, N- diethylsuccinamate.

 11. The composition of Claim 1 which is repellent to insects comprising biting insects, wood-boring insects, noxious insects, and household pest insects.

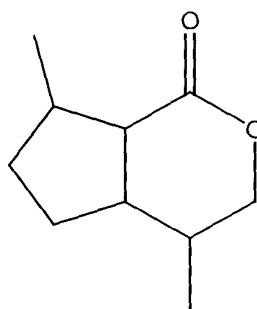
30 12. The composition of Claim 1 which is repellent to one or more of mosquitoes, stable flies and ticks.

13. The composition of Claim 1 which is in the form of a cologne, a lotion, a spray, a cream, a gel, an ointment, a bath or shower gel, a foam product, makeup, a deodorant, shampoo, a hair lacquer or rinse or a personal soap.

5 14. The composition of Claim 1 which is in the form of an insect repellent article of manufacture.

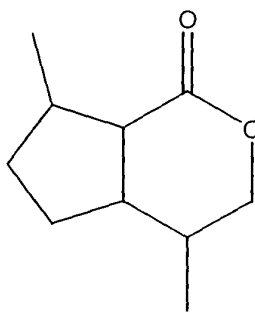
10 15. The article of Claim 14 which is selected from the group consisting of air freshener, a candle, a scented articles, a fiber, a sheets, cloth, paper, paint, ink, clay, wood, furniture, carpeting, sanitary goods, a plastic, and a polymer.

15 16. A composition of matter that repels one or more insects selected from the group consisting of bees, black flies, chiggers, fleas, green head flies, mosquitoes, stable flies, ticks, wasps, wood-boring insects, houseflies, cockroaches, lice, roaches, wood lice, flour and bean beetles, dust mites, moths, silverfish, and weevils, comprising a dihydronepetalactone, or a mixture of dihydronepetalactone stereoisomers, represented by the general formula:

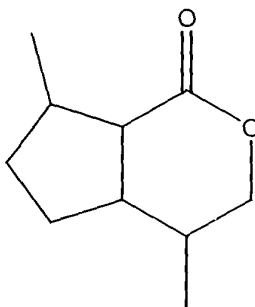


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17. A composition of matter that has a mean complete protection time that is statistically indistinguishable from that of *N,N*-diethyl-*m*-toluamide comprising a dihydronepetalactone, or a mixture of dihydronepetalactone stereoisomers, represented by the general formula:



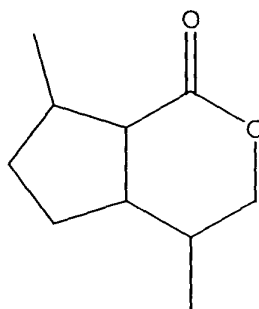
18. A method of repelling insects from a human, animal or
 5 inanimate host comprising exposing the insects to a dihydronepetalactone, or a mixture of dihydronepetalactone stereoisomers, represented by the general formula:



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19. The use of a dihydronepetalactone, or a mixture of dihydronepetalactone stereoisomers, represented by the general formula:

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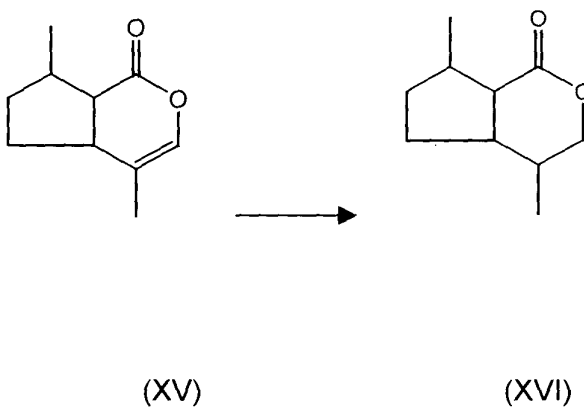


to repel insects from a human, animal or inanimate host.

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20. A process for the production of a dihydronepetalactone of formula (XVI) comprising hydrogenating a nepetalactone of formula (XV) according to the following scheme:

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20 in the presence of palladium supported on a catalyst support that is not SrCO_3 .

21. The process as recited in Claim 20 wherein the catalyst support is selected from the group consisting of carbon, alumina, silica, silica-alumina, titania, titania-alumina, titania-silica, barium, calcium, 25 compounds thereof, and combinations thereof.

22. The process as recited in Claim 20 wherein the catalyst support is carbon.

23. The process as recited in Claim 20 wherein the palladium content is from about 0.1% to about 20%.

5 24. The process as recited in Claim 20 which is effected in the presence of a metal promoter.

25. The process as recited in Claim 20 which is performed at a temperature of about 25°C to about 250°C and a pressure of about 0.1 MPa to about 20 MPa.

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